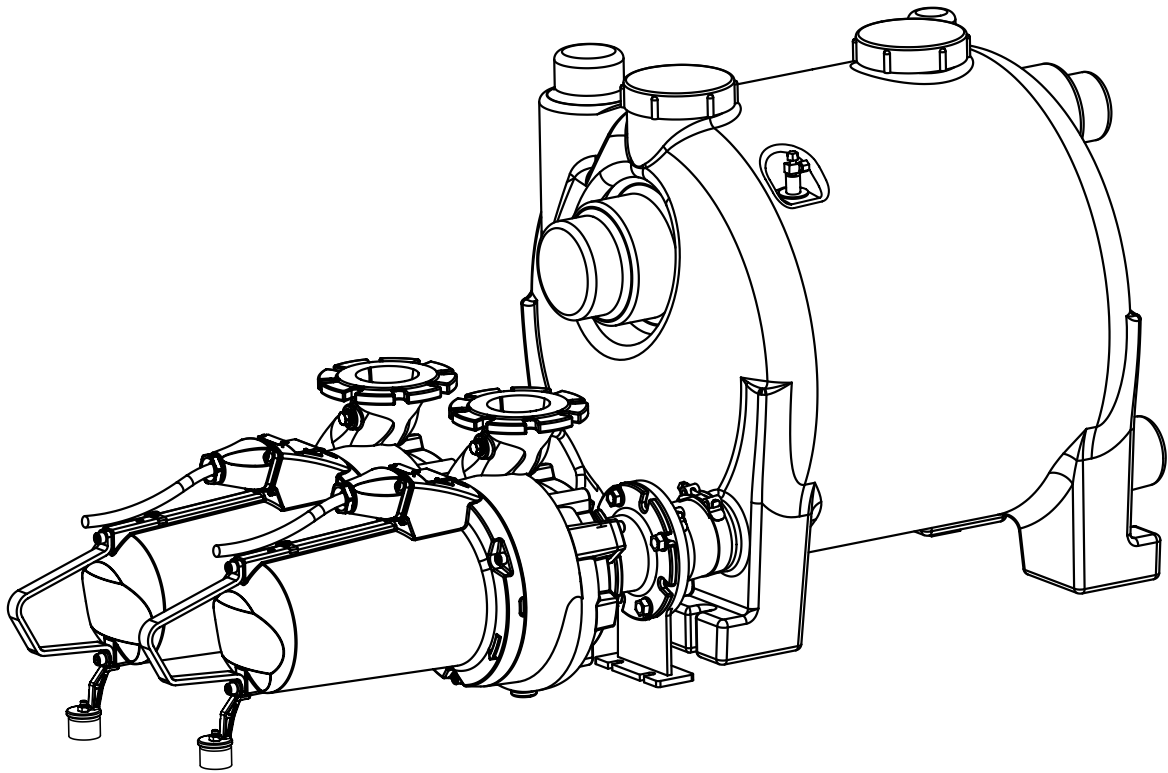

Lifting Station Type ABS Sanimat 4002

1030-01



Lifting Station Type ABS Sanimat

4002

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1 General

1.1 Application areas

The flood-proof sewage lifting station Sanimat 4002 has been designed for the pumping of sewage from locations below the sewer backwash level in accordance with EN 12056.



These lifting stations may not be used in hazardous locations (Ex) or for the collection or pumping of flammable or corrosive liquids. Effluent containing grease, petrol, or oil should only be brought to the lifting station via a separation device.



Local regulations governing explosive applications must be observed.

ATTENTION! *As with all electrical devices, this product may fail due to operating errors, absence of mains voltage, or even a technical defect. Such a failure may result in medium or water escaping. If damage may occur due to the specific usage, measures are required to avoid such damage arising. In this respect, taking account of the conditions in question, particularly use of an off-grid alarm system, use of an emergency generator, and provision of an additional and appropriately connected second unit are to be considered*

1.2 Technical data

Maximum noise level ≤ 70 dB.

Detailed technical information is available in the technical data sheets “Lifting Station Type ABS Sanimat 4002”, and Submersible Sewage Pump Type ABS XFP 80C-150E, which can be downloaded from www.sulzer.com > Products & Services > Pumps and Systems.

1.3 Nameplate

We recommend that you record the data from the standard nameplate on the pump (see sample) in the corresponding form below, and maintain it as a source of reference for the ordering of spare parts, repeat orders and general queries.

Always state the pump type, item number and serial number in all communications.

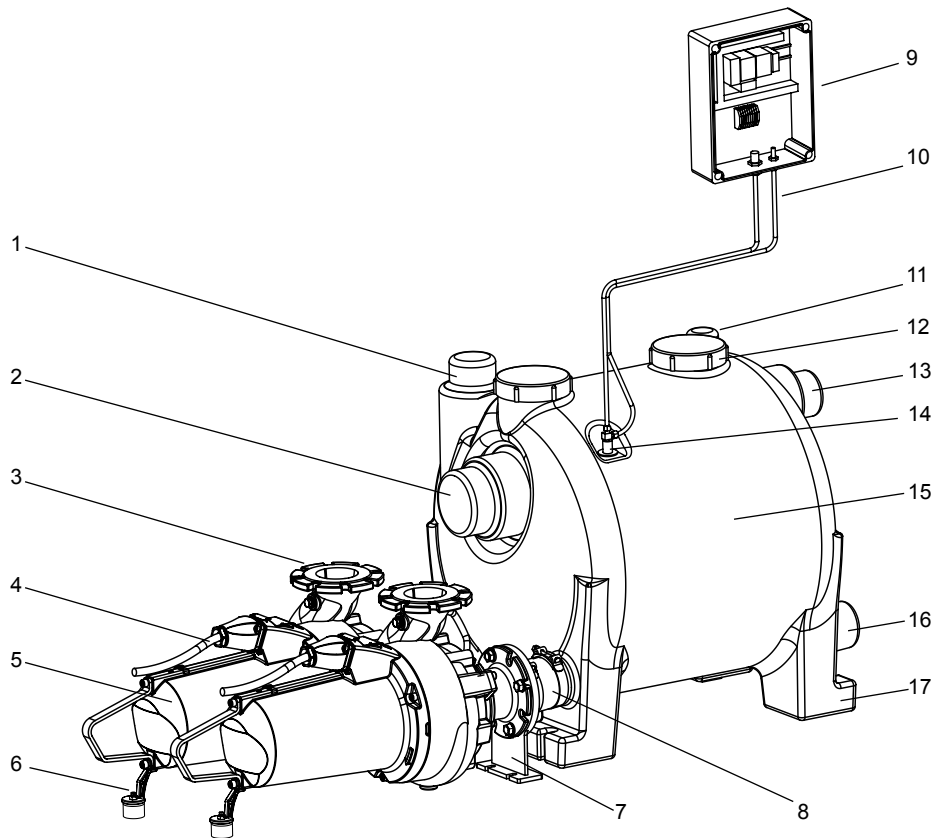
Sample nameplate

SULZER		CE	xx/xxxx	IP 68
Typ				
Nr		Sn		
U _N	I _N	Ph	Hz	
P1:	Cos φ	n	Weight	
P2:				
IEC 60034-30 IE3				
Q _{max}	H _{max}			
DN	H _{min}	Ø Imp		
Sulzer Pump Solutions Ireland Ltd.				
Wexford, Ireland.				
Made in Ireland	www.sulzer.com			

Legend

Typ	Pump type	
Nr	Item number	
Sn	Serial number	
xx/xxxx	Production date (week/year)	
U _N	Rated voltage	V
I _N	Rated current	A
Ph	Number of phases	
Hz	Frequency	Hz
P1	Rated input power	kW
P2	Rated output power	kW
1/min	Speed	r/min
Cos φ	Power factor	pf
NEMA	NEMA code	
Q _{max}	Max. Flow	m ³ /h
H _{max}	Max. Head	m
Ø Imp.	Impeller diameter	mm
DN	Discharge diameter	mm

Figure 1: Nameplate, standard version

1.4 Design of the sewage lifting station

1031-01

Figure 2: Design of the lifting station

1. Inflow ports DN 100/150
2. Inflow port DN 150/200, height 600 mm
3. Discharge
4. Motor connection cable
5. Submersible pump
6. Pump head support
7. Volute support
8. Flexible connector between collection tank and submersible pump - is noise absorbing
9. Control panel
10. Control line for the level control
11. Vent port DN 70
12. Inspection opening
13. Inflow port DN 100/150, height 700 mm
14. Submerged tube for the level control
15. Collection tank
16. Pump connection port
17. Collection tank legs for fastening and for prevention of floating

1.5 Description

The flood-proof sewage lifting station Sanimat 4002 is a gas- and odour-tight synthetic collection tank complying with DIN 19760 and 12050-1, with either one or two Sulzer submersible sewage pumps from the XFP range, together with a control unit and level control system. The collection tank is fitted with a number of inflow ports. The unit is supplied from the factory with all inlet ports closed off. The inlet ports of dimensions DN 100, 150 and 200 are located at various heights and can be opened up as required.

XFP is a submersible sewage and wastewater pump with a Premium Efficiency motor and high-efficiency Contrablock Plus impeller. All motors comply with Insulation Class H (180 °C) and Protection Type IP 68. XFP pumps are supplied as standard with a moisture sensor (Di) and are fitted with bi-metallic thermal sensors in the stator. The motor shaft is supported in lubricated-for-life ball bearings. Shaft sealing is by means of double mechanical seals.

The sewage entering by the inlet port is collected in the odour-tight collection tank.

When a predetermined liquid level is reached, then the automatic level control system switches on the submersible pump and switches it off again when the tank is empty.

In the case of twin pumping stations the starting sequence of pumps is reversed at each starting operation. If level 2 is reached, then both submersible pumps work in parallel.

The automatic level control system functions as an electro-pneumatic control system based on the forced air bubbling principle by which compressed air is continually pumped via the submerged tube into the liquid in the collection tank. The counter-pressure caused by this is dependent on the liquid level present and operates a membrane switch in the control system by means of the control line (plastic hose).

Units supplied with one pump can be retrofitted with a second pump.

2 Safety

The general and specific Health and Safety conditions are described in detail in the "Safety Instructions for Sulzer Products Type ABS" booklet. If anything is not clear or you have any questions as to safety make certain to contact the manufacturer Sulzer.

This unit can be used by children aged 8 years and above, and persons with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, when they have been given supervision or instruction concerning the safe use of the device and understand the hazards involved. Children must not play with the appliance. Cleaning and user maintenance should not be performed by children without supervision.

3 Transport



During transport the unit should not be dropped or thrown.



The unit should never be raised or lowered by the power cable.



Any hoist used must be adequately dimensioned for the weight of the unit.

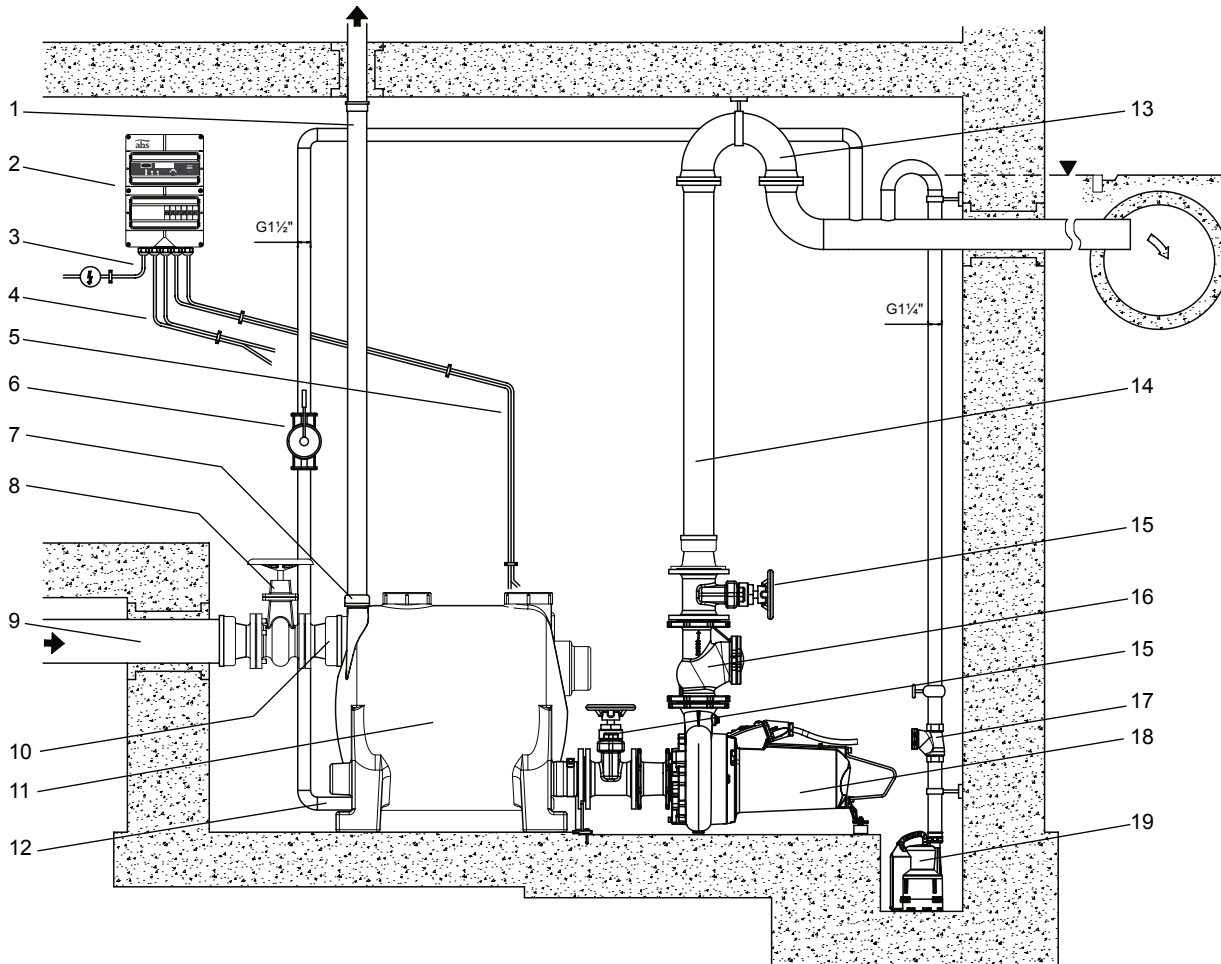
All relevant safety regulators as well as general good technical practice must be complied with.

4 Mounting and installation

NOTE: We recommend that original Sulzer installation accessories be used for mounting and installation of the unit



Particular attention must be paid to the safety regulations covering work in closed areas as well as good general technical practices.



1032-01

Figure 3: Installation example

Legend

- | | |
|--|---|
| 1 Vent Pipe (DN ≥70) above roof level | 11 Sanimat collection tank |
| 2 Control unit with level control system | 12 Hand membrane pump connection |
| 3 Power supply | 13 Backwash loop with lowest point above the backwash level |
| 4 Motor cable | 14 Discharge line (DN100) |
| 5 Twin control line for level control system | 15 Gate valve |
| 6 Hand membrane pump | 16 Non-return valve |
| 7 Push-on sleeve | 17 Separate non-return valve |
| 8 Gate valve | 18 Submersible sewage pump type ABS XFP |
| 9 Sewage inflow DN150 | 19 Pump sump with dewatering pump (Robusta - Coronada) |
| 10 Connection piece (push-on piece) | |

4.1 Site requirements

Rooms for sewage lifting stations must be large enough that a working area of at least 60 cm width or height is available around all parts which have to be operated or maintained. A pump sump has to be provided for dewatering of the room itself.

Electrical supply must adequately suit the submersible pumps being used.

NOTE: *Fusing, cable cross-section and voltage drop of the power line must comply with DIN/EN and the relevant electricity supply board regulations.*

Any openings required in walls or ceilings for discharge, vent, or inlet lines, must be of adequate dimensions so that the openings used can be sealed using noise absorbing materials.

The inlet lines must be laid in such a manner that there is a continuous fall of the prescribed magnitude to the inlet ports of the collection tank.

NOTE: *When installing lifting stations the noise protection regulations in buildings to DIN 4109 should be observed.*

4.2 Installation of the collection tank

Determine the installation location and set up the tank so that it is on level ground and horizontal in all directions.

Secure the collection tank (1) against movement or floating with the aid of plugs (3) and hex screws and washers (2).

ATTENTION! *Provide also for later positioning of the submersible pumps. The submersible pumps should be installed on the ground at the same level as the collection tank.*

ATTENTION! *Do not overtighten hex screws, or the collection tank may be damaged.*

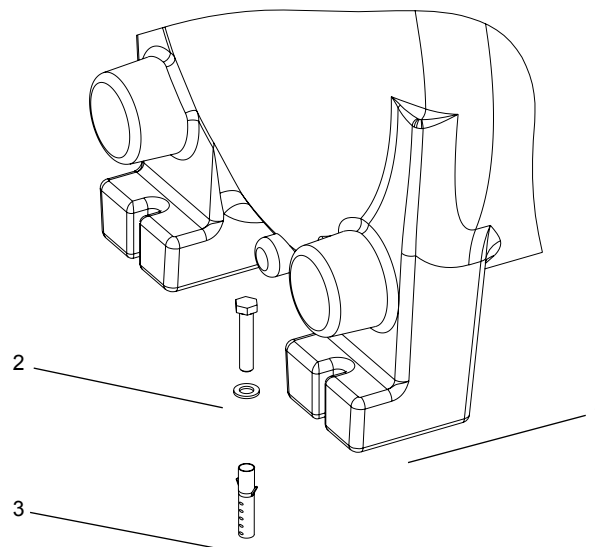


Figure 4: Bolting down of the collection tank

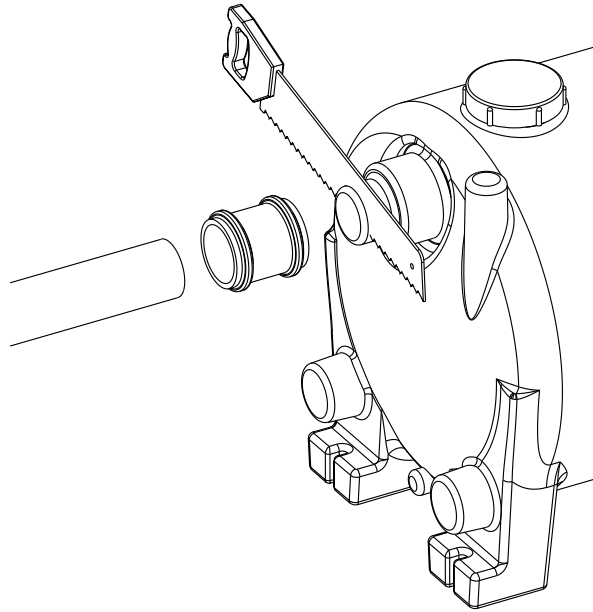
NOTE *Hexagon head wood screw 10 x 130, dowel size 12 (not supplied)*

4.3 Opening of the collection tank inlet ports

Only open inlet ports that are to be used. Saw off as little as possible so that as much material as possible is left for the plug connection.

File down sharp edges inside and outside.

ATTENTION! *The pump connection ports should not be used as inflow ports. Connect a maximum of two submersible pumps per tank.*



1034-00

Figure 5: Opening the connections on the collection tank

4.4 Discharge line

The discharge line must be installed in compliance with the relevant regulations.

DIN 1986/100 and EN 12056 applies in particular to the following:

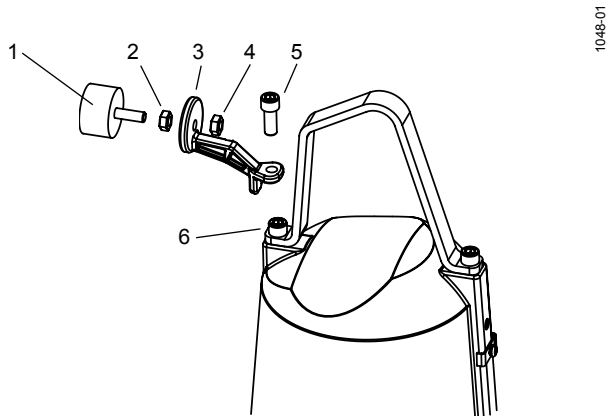
- The discharge line should be fitted with a backwash loop (180° bend) located above the backwash level and should then flow by gravity into the collection line or sewer.
- The discharge line should not be connected to a down pipe.
- No other inflows or discharge lines should be connected to this discharge line.

ATTENTION! *The discharge line should be installed so that it is not affected by frost.*

The vent line is connected by means of a push-on sleeve to the vertical outlet at the top of the collection tank. It should be of constant cross-section (min. DN 70) and should have a continuous rise to above roof level.

4.5 Installation of the submersible pump

4.5.1 Fitting of the pump head support



Remove bolt (6) from lifting hoop.
 Keeping in line with the lifting hoop, fit support foot (3) using bolt (5) to lifting hoop and motor housing.
 Fit adjusting nut (2) to vibration damper (1) and secure assembly to support foot with fixing nut (4).

Figure 6: Fitting of head support

4.5.2 Mounting of the volute support

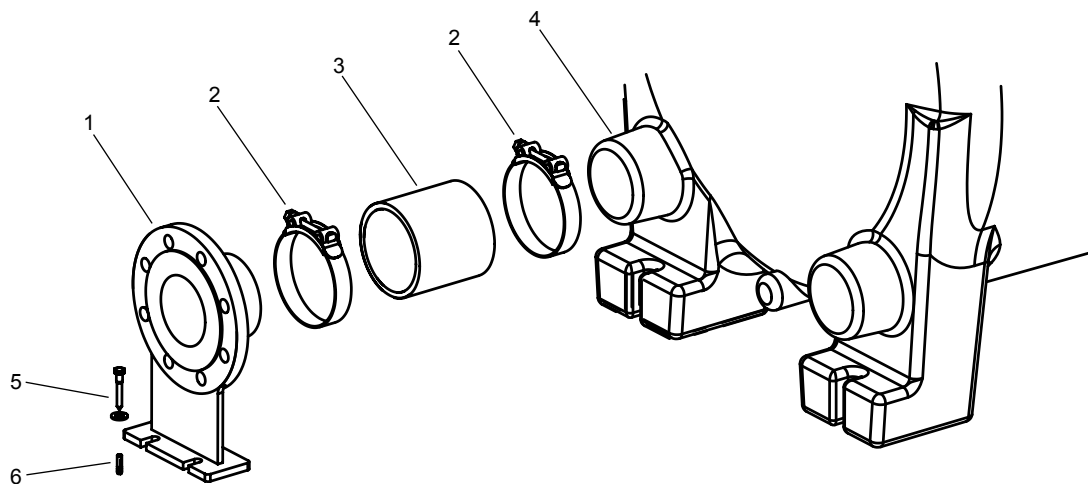


Figure 7: Mounting of volute support

Fit the flexible connector (3) with clamp (2) to the pump connection port (4) of the collection tank.
 Fit the volute support (1) into the flexible connector and mark the position of the volute support on the floor.
 Remove the volute support. Drill plug holes and fit plugs (6).
 Re-fit the volute support into the flexible connector and secure with clamp. Re-position on floor and secure with screws and washers (5).

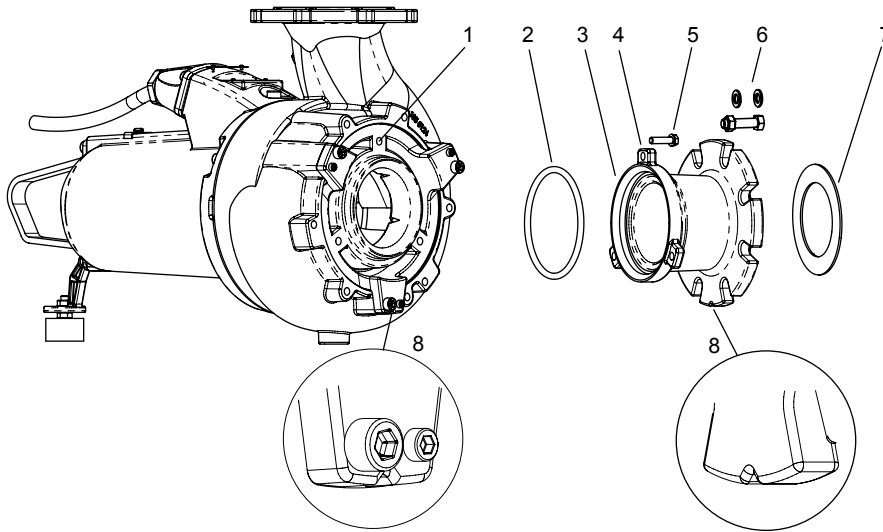
4.5.3 Mounting of the pump**Submersible pumps XFP 80C & 100C**

Figure 8: Fitting adaptor to pump

Fit o-ring (2) to pump side of adaptor (3).

Using bolts (5) connect lugs (4) on adaptor to corresponding drilled holes (1) in bottom plate of pump.

Note: To ensure correct positioning of the adaptor, notches (8) must be aligned between the flanged side of the adaptor and the bottom plate.

Fit seal (7) between adaptor flange and volute support and connect pump assembly to tank assembly using bolts, nuts and washers (6).

Tip: Loosely fit bottom bolts to hold seal in place, then add remaining bolts and tighten parts together.

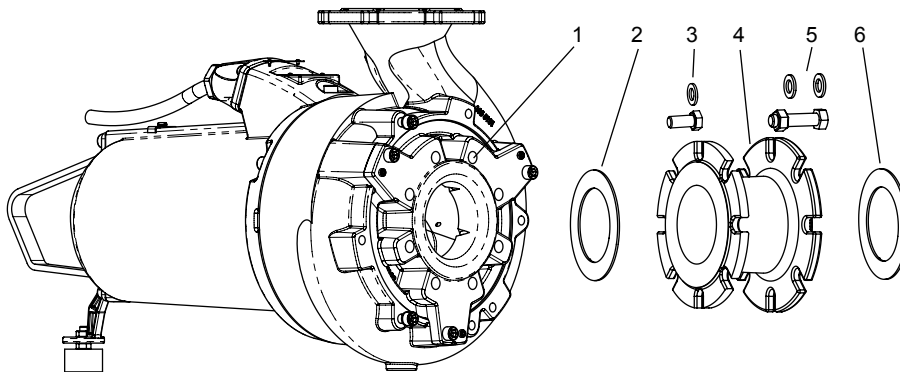
Submersible pump XFP 100E

Figure 9: Fitting adaptor to pump

Fit seal (2) between adaptor (4) and bottom plate of pump. Connect adaptor to bottom plate of pump by fitting bolts (3) to drilled holes (1).

Fit seal (6) between adaptor flange and volute support and connect pump assembly to tank assembly using bolts, nuts and washers (5).

Tip: Loosely fit bottom bolts to hold seal in place, then add remaining bolts and tighten parts together.

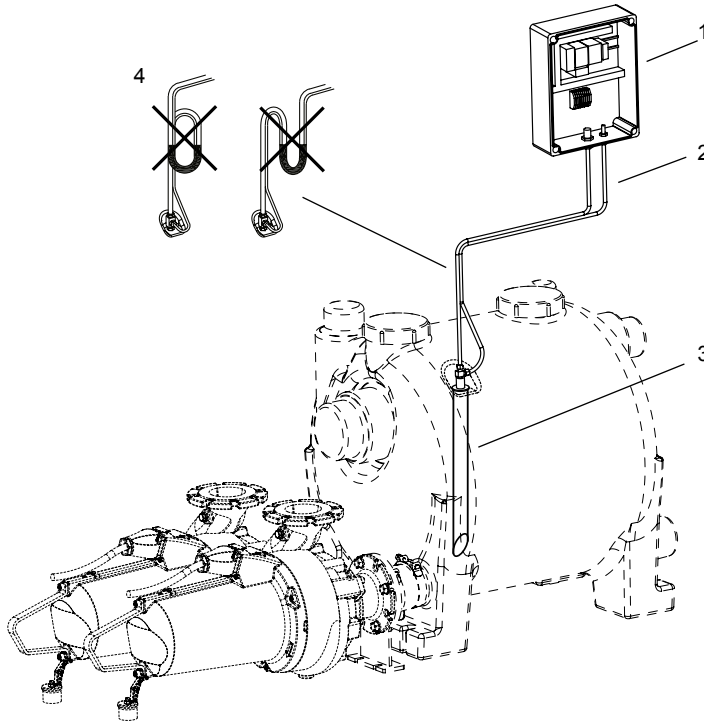
ATTENTION!

The area where the pump stands should be smooth and level. If necessary, adjust the vibration damper to ensure the head support extends to the ground and supports the weight of the motor housing. In the case of twin pumping stations the distance between the centre lines of the discharge ports is 460 mm.

4.6 Level control

The level control is a pneumatic system with submerged tube (3) and twin control line [plastic hose] (2) to the control unit (1).

The submerged tube is permanently installed in the collection tank. The required switching and control devices are installed in the control unit.



1166-00

Figure 10: Installation of the control pipe

ATTENTION! The control line must have a continuous rise to the control panel. It must not be looped or kinked (4).

4.7 Switching levels (mm)

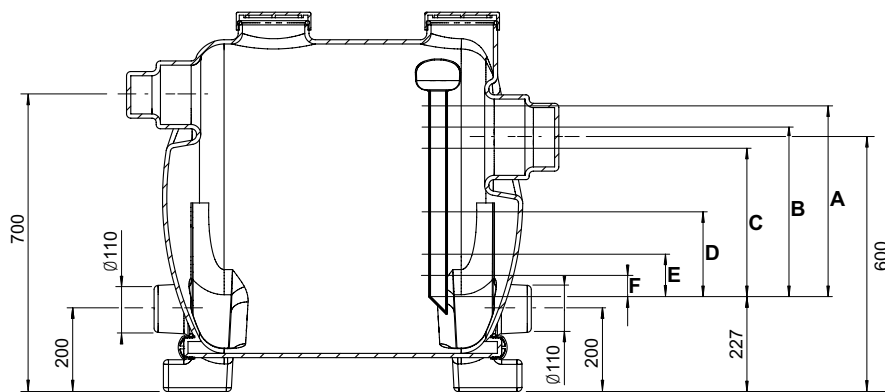


Figure 11: Switching levels

A = 450	High level alarm	D = 200	Pump 2 STOP
B = 400	Pump 2 ON	E = 100	Pump 1 STOP
C = 350	Pump 1 ON	F = 50	Dry-run STOP

4.8 Installation of the control unit

The control unit should be fitted above possible flood level in a well ventilated room and in an easily accessible position. Protection Class of the control unit is IP 54. The control unit should be secured at all fixing points.

ATTENTION! Do not drill through the housing of the control unit itself.

NOTE: The mounting location of the control unit should be chosen in such a manner that the control line rises in a continuous manner from the tank.

NOTE: A number of different control box models exist. Please check the wiring diagram/ instruction manual in the control box.

4.9 Electrical connection



Before commissioning, an expert should check that one of the necessary electrical protective devices is available. Earthing, neutral, earth leakage circuit breakers, etc. must comply with the regulations of the local electricity supply authority and a qualified person should check that these are in perfect order.

ATTENTION! The power supply system on site must comply with VDE or other local regulations with regard to cross-sectional area and maximum voltage drop. The voltage stated on the nameplate of the pump must correspond to that of the mains

The power supply cable must be protected by an adequately dimensioned slow-blow fuse corresponding to the rated power of the pump.



The incoming power supply as well as the connection of the pump itself to the terminals on the control panel must comply with the circuit diagram of the control panel as well as the motor connection diagrams and must be carried out by a qualified person.

All relevant safety regulators as well as general good technical practice must be complied with.

NOTE: The overload relay in the control unit has been correctly set at the factory.

NOTE: Please consult your electrician.

4.10 Wiring Diagram

XFP 80C & 100C: 13/6, 22/4, 29/4

XFP 100E: 60/4

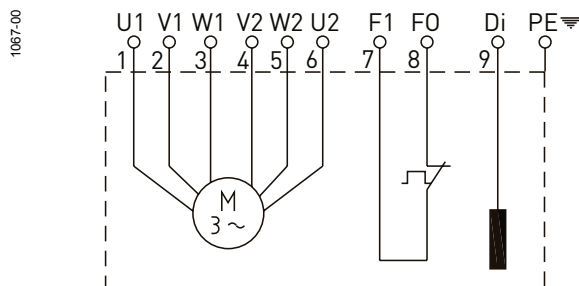
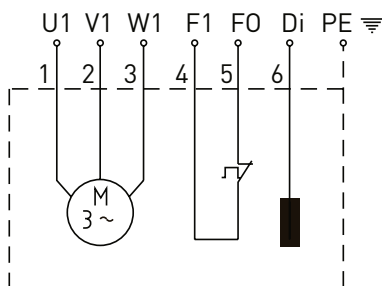


Figure 12: Wiring diagrams XFP 80C, 100C & 100E

- U1, V1, W1, U2, V2, W2 = Live
- PE = Earth
- F1/FO = Thermal sensor
- Di = Seal monitor

4.11 Checking direction of rotation

When three phase units are being commissioned for the first time and also when used on a new site, the direction of rotation must be carefully checked by a qualified person.



The direction of rotation should only be altered by a qualified person.



The safety hints in the previous sections must be observed!

ATTENTION! *The following characteristics of a submersible pump indicate a probable incorrect direction of rotation.*

- Runs unevenly and vibrates strongly.
- Does not achieve full output and the emptying times for the collection tank are too long.
- Makes unusual running noises.

4.12 Installation of the accessories

4.12.1 Installation of the Hand Membrane Pump (wall mounted)

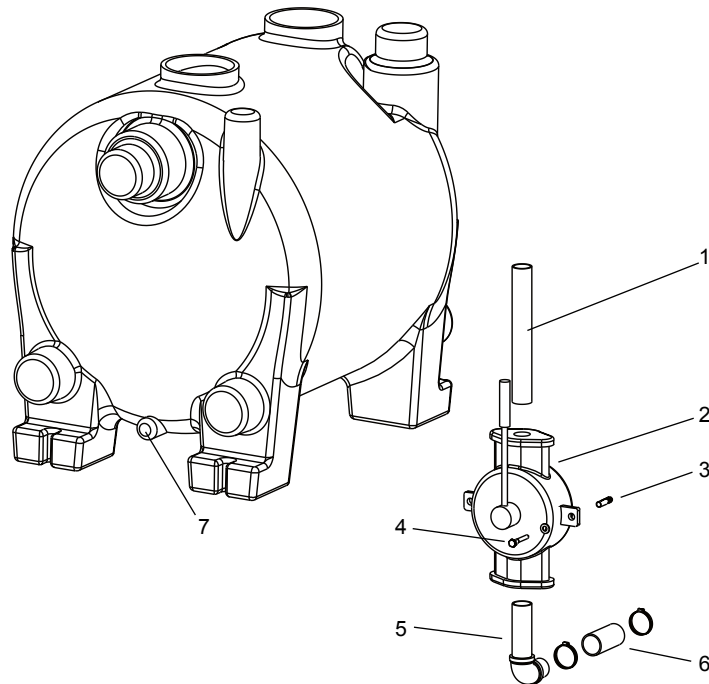


Figure 13: Installation of hand membrane pump

ATTENTION! *The discharge line (1) from the hand membrane pump (2) must be installed independently of the discharge line of the Sulzer submersible sewage pump, and likewise must be provided with an anti-siphon loop located above the sewer backwash level. The discharge lines must be brought to a location after the anti-siphon loop.*

Determine a fixing location for the hand membrane pump which is easily accessible, and fasten using plugs (3) and screws (4).

Open the connection port (7) on the collection tank using a saw, in accordance with Figure 5.

Bring the pipe line (5) from the hand membrane pump to the collection tank and connect to the chosen outlet port using a flexible junction piece and clamps (6).

ATTENTION! *The hand membrane pump should never be fastened to the collection tank.*

5 Commissioning



The safety hints in the previous sections must be observed!

Before commissioning the unit should be checked and a functional test carried out. Particular attention should be paid to the following:

- Have the electrical connections been carried out in accordance with regulations?
- Is the direction of rotation correct - even if run via an emergency generator?
- Was the control line (plastic hose) laid in such a manner that it has a continuous rise?
- Was the collection tank secured against floating?
- Has venting been installed in accordance with the regulations?

ATTENTION! *Before commissioning the collection tank should be cleaned of any large particles and filled with water. If the control line (plastic hose) was connected to the submerged tube with the tank already full, then the collection tank must be fully emptied once by activation of the selector switch "Hand". After commissioning the faecal lifting station is normally operated with the selector switch in position "Auto".*

6 Maintenance



Before commencing any maintenance work the unit should be completely disconnected from the mains by a qualified person and care should be taken that it cannot be inadvertently switched back on.



When carrying out any repair or maintenance work, the safety regulations covering work in enclosed areas of sewage installations as well as good general technical practices should be followed.



Servicing must only be carried out by qualified personnel.

NOTE: *The maintenance hints given here are not designed for "do-it-yourself" repairs as special technical knowledge is required.*

NOTE: *A maintenance contract with our works service department will guarantee you the best technical service under all circumstances.*

NOTE: *To avoid danger if the power cable is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person.*

6.1 Maintenance of lifting stations in accordance with EN 12056.

It is recommended that the lifting station be inspected monthly and its function checked.

In accordance with EN regulations, the lifting station should be maintained by a qualified person at the following intervals:

- in commercial premises every three months.
- in apartment blocks every six months.
- in a single family home once a year.

In addition we recommend that a maintenance contract be taken out with a qualified company.

6.2 General maintenance hints

Sulzer lifting stations are reliable quality products each being subjected to careful final inspection. Lubricated-for-life ball bearings together with monitoring devices ensure optimum pump reliability provided that the pump has been connected and operated in accordance with the operating instructions.

Should, nevertheless, a malfunction occur, do not improvise but ask your Sulzer customer service department for assistance.

This applies particularly if the unit is continually switched off by the current overload in the control panel, by the thermal sensors of the thermo-control system or by the seal monitoring system (DI).

Regular inspection and care is recommended to ensure a long service life.

NOTE: *The Sulzer service organisation would be pleased to advise you on any applications you may have and to assist you in solving your pumping problems.*

NOTE: *The Sulzer warranty conditions are only valid provided that any repair work has been carried out in Sulzer approved workshop and where original Sulzer spare parts have been used.*

NOTE: *Running the pump with the thermal and/or moisture sensors disconnected will invalidate related warranty claims.*

6.3 Oil filling and changing

Waste oil must be disposed of in the proper manner.

6.4 Cleaning of level control pipe

It is recommended that the level control pipe be examined monthly to ensure that no build up of solids occurs inside the pipe, thus preventing accurate level control of the lifting station. Build-up of solids inside the pipe can cause continuous pumping, no pumping or inaccurate switching levels. The pipe can be pulled out of the tank and cleaned, rinsed and replaced. It should be greased as it is put back in.

